Chapter 12

Heron's Formula

In the Chapter

- Area of a triangle with its sides as a, b and c is calculated by using Heron's formula, stated as

  Area of triangle = $\sqrt{s(s-a)(s-b)(s-c)}$

  where $s = \frac{a+b+c}{2}$

- Area of a quadrilateral whose sides and one diagonal are given, can be calculated by dividing the quadrilateral into two triangles and using the Heron's formula.
- **Rhombus** with diagonals d_1 and d_2.

  (a) Area = $\frac{1}{2} d_1 \times d_2$ (b) Perimeter = $2\sqrt{{d_1}^2 + {d_2}^2}$

- **Equilateral** triangle with side a

  Area = $\frac{\sqrt{3}}{4} a^2$

- **Parallelogram** with base b and altitude h

  Area = bh

- **Triangle** with base (b) and altitude (h)

  Area= $\frac{1}{2} \times b \times h$

- Triangle with sides as a, b, c

  (i) **Semi-perimeter** = $\frac{a+b+c}{2} = s$

  (ii) Area = $\sqrt{s(s-a)(s-b)(s-c)}$ (Heron's formula)

- Isosceles triangle, with base a and equal side b

  Area of isosceles triangle = $\frac{a}{4}\sqrt{4b^2 - a^2}$

- **Rectangle :**
  (a) Area = length × breadth
  (b) Perimeter = 2(length + breadth)
- **Square :**
  (a) Area = $(\text{side})^2$ (b) Perimeter = 4 × side (c) Diagonal = $\sqrt{2}$ × side

NCERT TEXT BOOK QUESTIONS (SOLVED)

EXERCISE 12.1

Q.1.A traffic signal board, indicating 'SCHOOL AHEAD', is an equilateral triangle with side '*a*'. Find the area of the signal board, using Heron's formula. If its perimeter is 180 cm, what will be the area of the signal board?

Ans. We know that, an equilateral triangle has equal sides. So, all sides are equal to *a*.

Perimeter of triangle = 180 cm (given)

$\Rightarrow \quad a + a + a = 180$

$\Rightarrow \quad 3a = 180$

$\Rightarrow \quad a = 60\,\text{cm}$

$\therefore \quad s = \dfrac{180}{2}$

$[2s = a + b + c]$

$s = 90\,\text{cm}$

Area of an equilateral triangle

$= \sqrt{s(s-a)(s-b)(s-c)}$

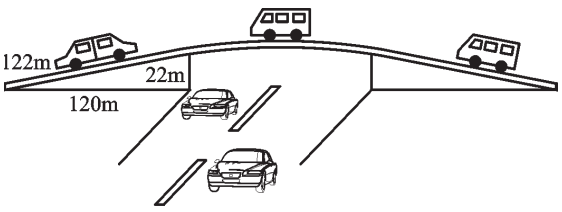
[Heron's formula, $s = \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{90(90-60)(90-60)(90-60)}$

$= \sqrt{30\times3\times30\times30\times30} = 30\times30\sqrt{3}$

$= 900\sqrt{3}\ \text{cm}^2$

Q.2. The triangular side walls of a flyover have been used for advertisements. The sides of the walls are 122 m, 22 m and 120 m (see Fig.). The advertisements yield an earning of Rs. 5000 per m^2 per year. A company hired one of its walls for 3 months. How much rent did it pay?



Ans. Let *a* = 122 m, *b* = 22 m, c =120 m

$s = \dfrac{a+b+c}{2} = \dfrac{122+22+120}{2}$

$= 132\,\text{m}$

Area of triangle side wall

$= \sqrt{s(s-a)(s-b)(s-c)}$

(Heron's formulae)

$= \sqrt{132(132-122)(132-22)(132-120}$

$= \sqrt{132\times10\times110\times12} = 1320m^2$

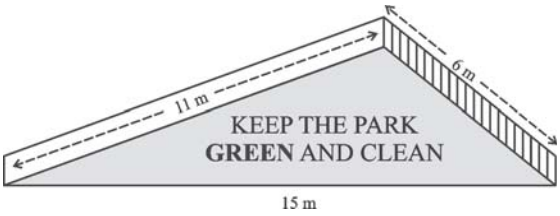
Rate of rent = Rs. 5000 per m^2 per year

Total rent for 3 month

$= 1320 \times 5000 = \dfrac{3}{12}$

= Rs. 1650000.

Q.3. There is a slide in a park. One of its side walls has been painted in some colour with a message "KEEP THE PARK GREEN AND CLEAN" (see Fig.). If the sides of the wall are 15 m, 11 m and 6 m, find the area painted in colour.



Ans. Let *a* = 15m, *b* = 11m, *c* = 6m.

$s = \dfrac{a+b+c}{2} = \dfrac{15+11+6}{2} = 16m$

Using Heron's formula,

Area $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{16(16-15)(16-11)(16-6)}$

$= \sqrt{16\times1\times5\times10} = 4\times5\times\sqrt{2}$

$= 20\sqrt{2}m^2$

Q.4. Find the area of a triangle two sides of which are 18cm and 10cm and the perimeter is 42cm.

Ans. Perimeter of the triangle = 42 cm

Let *a* = 18 cm, *b* = 10 cm

$\therefore$ c = (42 – 18 – 10) cm = 14 cm.

$s = \dfrac{a+b+c}{2} = \dfrac{42}{2} = 21cm$

Using Heron's formula,
Area of triangle

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{21(21-18)(21-14)(21-10)}$

$= \sqrt{21\times3\times7\times11} = \sqrt{21\times21\times11}$

$= 21\sqrt{11}\,cm^2$

Q.5. Sides of a triangle are in the ratio of 12 : 17 : 25 and its perimeter is 540cm. Find its area.

Ans. Perimeter of the triangle = 540 cm
Let sides of Δ.
$a = 12x$, $b = 17x$, $c = 25x$.

Now $a + b + c = 540$
$12x + 17x + 25x = 540$
or $54x = 540$
Þ $x = 10$
∴ $a = 12x = 12 \times 10 = 120$ cm
$b = 17x = 17 \times 10 = 170$ cm
$c = 25x = 25 \times 10 = 250$ cm

$s = \frac{a+b+c}{2} = \frac{540}{2}$

$= 270$ cm

Area of triangle

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{270(270-120)(270-170)(270-250)}$

$= \sqrt{270\times150\times100\times20}$

$= \sqrt{9\times3\times10\times5\times3\times10\times10\times10\times2}$

$= \sqrt{9\times9\times10\times10\times10\times10\times10\times10}$

$= 9 \times 10 \times 10 \times 10 = 9000$ cm²

Q.6. An isosceles triangle has perimeter 30 cm and each of the equal sides is 12 cm. Find the area of the triangle.

Ans. Perimeter = 30 cm
Let $a = 6 = 12$
∴ $c = 30 - 12 - 12 = 6$ cm

$s = \frac{a+b+c}{2} = \frac{30}{2} = 15$ cm

Using Heron's formula,

Area $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{15(15-12)(15-12)(15-6)}$

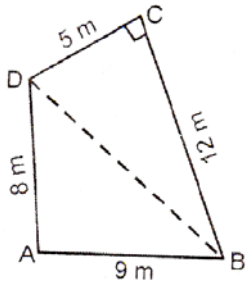
$= \sqrt{15\times3\times3\times9}$

$= 9\sqrt{15}\,cm^2$

EXERCISE 12.2

Q.1. A park, in the shape of a quadrilateral ABCD, has ∠C = 90°, AB = 9 m, BC = 12 m, CD = 5 m and AD = 8 m. How much area does it occupy?

Ans. ABCD is the park as shown in the figure.
Join BD



In ΔDBC, we have

$DB^2 = BC^2 + CD^2$
[Pythagoras theorem]

$\Rightarrow DB^2 = (12)^2 + 5^2$

$\Rightarrow DB^2 = \sqrt{144+25} = \sqrt{169}$

$\Rightarrow DB = 13$ m.

Area of ΔDBC $= \frac{1}{2} \times$ base $\times$ height

$= \frac{1}{2} \times 12 \times 5\ m^2 = 30 m^2$

In ΔABD, $a = 9$m, $b = 8$m, $c = 13$ m

∴ $s = \frac{a+b+c}{2} = \frac{9+8+13}{2}$ m $= 15$ m

∴ Area of ΔABD

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{15(15-9)(!5-8)(15-13)}m^2$

$= \sqrt{15\times6\times7\times2}$ m $^2 = \sqrt{1260}$ m²

$= 35.5 m^2$ (approx)

$\therefore$ Area of the park

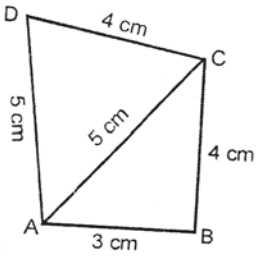
$=$ Area of ΔDBC + area of ΔABD

$= (30 + 35.5) m^2 = 65.5 m^2$

Q.2. Find the area of a quadrilateral ABCD in which AB = 3 cm, BC = 4 cm, CD = 4 cm, DA = 5 cm and AC = 5 cm.

Ans. In DABC, we have

$AB^2 + BC^2 = 9 + 16 = 25 = AC^2$



Clearly, ABC is a right triangle,

i.e., $\angle B = 90°$

(As, AB, BC and AC forms a Pythagorean triplet)

$\therefore$ Area of $\Delta ABC = \frac{1}{2} \times$ base $\times$ height

$= \frac{1}{2} \times 3 \times 4\ cm^2 = 6\ cm^2$

In ΔACD, $a = 5$cm, $b = 4$ cm, $c = 5$ cm.

$s = \frac{a+b+c}{2} = \frac{5+4+5}{2}$ cm $= 7$ cm

$\therefore$ Area of ΔACD

$= \sqrt{s(s-a)(s-b)(s-c)}$

[Heron's formula)

$= \sqrt{7 \times (7-5)(7-4)(7-5)}\ cm^2$

$= \sqrt{7 \times 2 \times 3 \times 2}\ cm^2 = \sqrt{84}\ cm^2$

$= 9.2\ cm^2$ (approx)

$\therefore$ Area of the quadrilateral

$=$ Area of ΔABC + Area of ΔACD

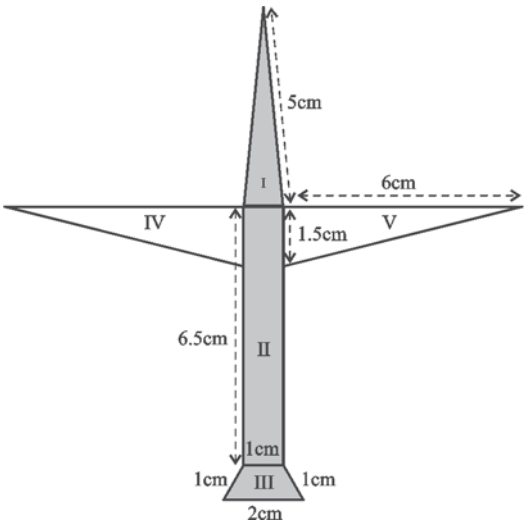
$= (6 + 9.2) cm^2 = 15.2\ cm^2$

Q.3. Radha made a picture of an aeroplane with coloured paper as shown in Fig. Find the total area of the paper used.

Ans. Area (shade V)

$= \frac{1}{2} \times 6 \times 1.5 = 4.5$ cm

Area (shade IV) $= 4.5\ cm^2$



Area (shade II) $= 6.5 \times 1 = 6.5\ cm^2$

Area (shade III) $= \frac{1}{2}(2+1) \times 1 = 1.5\ cm^2$

For shade , $a = 5, b = 5, c = 1$

$s = \frac{5+5+1}{2} = 5.5$

Area (shade I)

$= \sqrt{s(s-a)(s-b)(s-c)}$

[Heron's formula)

$= \sqrt{5.5(5.5-5)(5.5-5)(5.5-1)}$

$= \sqrt{5.5 \times 0.5 \times 0.5 \times 4.5}$

$= 0.5 \times 5\sqrt{1.1 \times 0.9}$

$= 2.5\sqrt{0.99} = 2.5 \times 0.95$

$= 2.48 = 2.5\ cm^2$

Total area of paper used

$=$ Area I + Area II + Area III + Area IV + Area V

$= 2.5 + 6.5 + 1.5 + 4.5 + 4.5$

$= 19.4\ cm^2$

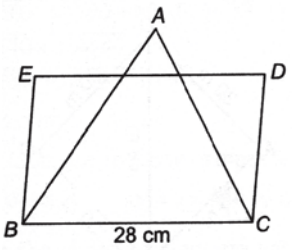
Q.4. A triangle and a parallelogram have the same base and the same area. If the sides of the triangle are 26 cm, 28 cm and 30 cm, and the parallelogram stands on the base 28 cm, find the height of the parallelogram.

Ans. For triangle

$ab = 26$ cm

$bc = 28$ cm

ca = 30 cm



Now, $s = \frac{AB+BC+CA}{2}$

$= \left(\frac{28+28+30}{2}\right)$ cm

$\Rightarrow s = \frac{84}{2}$ cm

$\Rightarrow s$ = 42 cm

Area of $\Delta ABC = \sqrt{42(42-26)(42-28)(42-30)}$

(By Heron's formula)

$= \sqrt{42\times16\times14\times12}$

$= \sqrt{7\times2\times3\times2\times2\times2\times2\times7\times2\times3\times2\times2}$

$= 7\times2\times2\times2\times2\times3$

$= 336\ cm^2$

We know that,

Area of parallelogram = Base × Height ...(i)

We have,

Area of parallelogram = Area of DABC

$= 336\ cm^2$

For Eq. (i) we have

Base × height = 336

$\Rightarrow$ 28 × height = 336

$\Rightarrow$ height $= \frac{336}{28}$

$\Rightarrow$ height = 12 cm

Q.5. A rhombus shaped field has green grass for 18 cows to graze. If each side of the rhombus is 30 m and its longer diagonal is 48 m, how much area of grass field will each cow be getting?

Ans. For ΔABC, a = 30 m

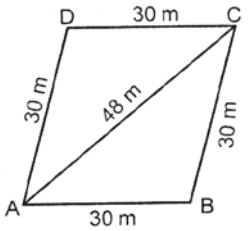
b = 30 m

c = 48 m

$\therefore s = \frac{a+b+c}{2}$

$= \frac{30+20+49}{2}$

$= \frac{108}{2} = 54m$



$\therefore$ Area of ΔABC

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{54(54-30)(54-30)(54-48)}$

$= \sqrt{54\times24\times24\times6}$

$= \sqrt{9\times6\times24\times24\times6}$

$= 3\times6\times24 = 432 m^2$

Area of rhombus = 432 ×2 = 864 m^2

Hence area of grass for one cow

$= \frac{864}{18} = 48\ m^2$.

Q.6.An umbrella is made by stitching 10 triangular pieces of cloth of two different colours (see Fig.), each piece measuring 20 cm, 50 cm and 50 cm. How much cloth of each colour is required for the umbrella?

Ans. For one triangular piece

a = 20 cm, b = 50 cm, c = 50 cm

$\therefore$ s $= \frac{a+b+c}{2} = \frac{20+50+50}{2}$

$= \frac{120}{2} = 60$ cm

∴ Area of one triangle

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{60(60-20)(60-50)(60-50)}$

$= \sqrt{60\times40\times10\times10}$

$= \sqrt{6\times10\times10\times4\times10\times10}$

$= 200\sqrt{6}$ cm²

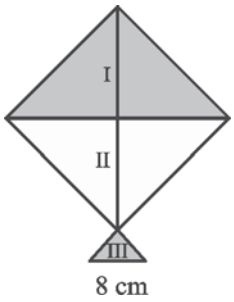
Area of 5 triangular pieces of one colour

$= 5\times 200\sqrt{6} = 1000\sqrt{6}$ cm²

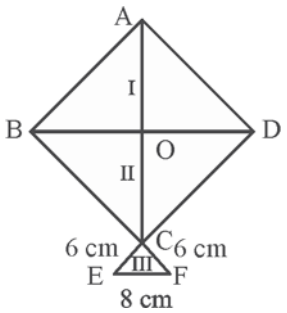
Area of 5 triangular pieces of another colour

$= 1000\sqrt{6}$ cm²

Q.7. A kite in the shape of a square with a diagonal 32 cm and an isosceles triangle of base 8 cm and sides 6 cm each is to be made of three different shades as shown in Fig.. How much paper of each shade has been used in it?



Ans. ABCD is a square



So, AO = OC = OB = OD

and ∠AOB = 90°

[Diagonals of a square bisect each other at right angles]

BD = 32 cm

$\Rightarrow$ OA = $\frac{32}{2}$ cm = 16 cm.

ΔABD is a right triangle.

So, area of ΔABD

$\frac{1}{2}\times$ base $\times$ height $= \frac{1}{2}\times 32\times 16$ cm²

$= 256$ cm²

The area of ΔBCD $= 256$ cm²

For triangle CEF, $a = b = 6$ cm, $c = 8$ cm

$\therefore \quad s = \frac{a+b+c}{2} = \frac{6+6+8}{2}$ cm = 10 cm

∴ Area of the triangle.

$= \sqrt{s(s-a)(s-b)(s-c)}$

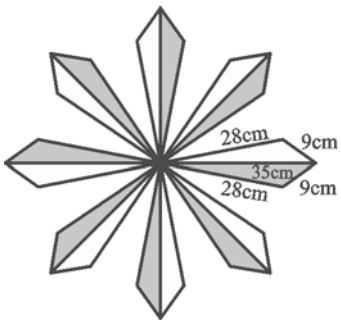
$= \sqrt{10(10-6)(10-6)(10-8)}$ cm²

$= \sqrt{10\times4\times4\times2}$ cm² = $\sqrt{320}$ cm²

$= 17.92$ cm²

Hence, paper needed for shade I = 256 cm², for shade II = 256 cm² and for shade III = 17.92 cm².

Q.8. A floral design on a floor is made up of 16 tiles which are triangular, the sides of the triangle being 9 cm, 28 cm and 35 cm (see Fig.). Find the cost of polishing the tiles at the rate of 50p per cm².



Ans. For one tile

$a = 28$ cm, $b = 9$ cm, $c = 35$ cm

$\therefore \quad s = \frac{a+b+c}{2} = \frac{28+9+35}{2} = \frac{72}{2} = 36$ cm

∴ Area of one tile

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{36(36-28)(36-9)(36-35)}$

$= \sqrt{36\times8\times27\times1}$

$= \sqrt{6\times6\times2\times2\times2\times3\times3\times3}$

$= 6\times2\times3\sqrt{6} = 36\sqrt{6}$

$= 36 \times 2.45\ cm^2$ (approx.)

$= 88.2\ cm^2$

Area of 16 tiles

$= 88.2 \times 16 = 1411.2\ cm^2$

Cost of polishing

$= 1411.25 \times 50$ p

= Rs. 705.60 (approx.)

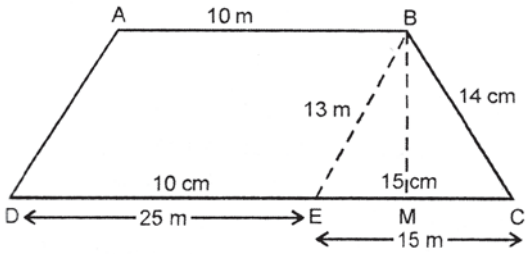
Q.9. A field is in the shape of a trapezium whose parallel sides are 25 m and 10 m. The non-parallel sides are 14 m and 13 m. Find the area of the field.

Ans. For ΔBEF

$a = 13$m

$b = 14$m

$c = 15$m



$\therefore \quad s = \frac{a+b+c}{2} = \frac{13+14+15}{2} = \frac{42}{2} = 21$ cm

$\therefore$ Area of (ΔBEC)

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{21(21-13)(21-14)(21-15)}$

$= \sqrt{21 \times 8 \times 7 \times 6}$

$= \sqrt{7 \times 3 \times 4 \times 2 \times 7 \times 3 \times 2}$

$= 7 \times 4 \times 3 = 84 m^2$

Again area of ΔBEM $= \frac{1}{2} \times EC \times BM$

or $\quad 84 = \frac{1}{2} \times 15 \times BM$

$BM = \frac{82 \times 2}{15} = \frac{168}{15} = \frac{56}{5}$ m

Now area of parallelogram ABED

$= \frac{10 \times 56}{5} = \frac{560}{5} = 112\ m^2$

Hence area of trapezium ABCD = 112 + 84

$= 196 m^2$

Alternatively :

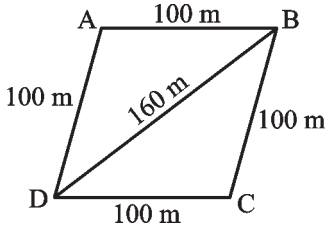
Area of trapezium $= \frac{1}{2}$ (a+b) h

$= \frac{1}{2} \times (25+10) \times \frac{56}{5}$

$= 196 m^2$

Additional Questions

Q.1. Sanya has a piece of land which is in the shape of a rhombus (see Fig.). She wants her one daughter and one son to work on the land and produce different crops. She divided the land in two equal parts. If the perimeter of the land is 400 m and one of the diagonals is 160 m, how much area each of them will get for their crops?



Ans. : Let ABCD be the field.

Perimeter = 400 m

So, each side = 400 m ÷ 4 = 100 m.

i.e. AB = AD = 100 m.

Let diagonal BD = 160 m.

Then semi-perimeter *s* of ΔABD is given by

$s = \frac{100+100+160}{2}$ m = 180 m

Therefore, area of ΔABD

$= \sqrt{180(180-100)(180-100)(180-160)}$

$= \sqrt{180 \times 80 \times 80 \times 20}\ m^2 = 4800 m^2$

Therefore, each of them will get an area of $4800 m^2$.

Alternative method : Draw CE ⊥ BD (see Fig).

As BD = 160 m, we have

DE = 160 m ÷ 2 = 80 m

And, $DE^2 + CE^2 = DC^2$, which gives

$$CE = \sqrt{DC^2 - DE^2}$$

or, $$CE = \sqrt{100^2 - 80^2}\ m = 60m$$

Therefore, area of $\Delta BCD = \frac{1}{2} 160 \times 60\ m^2 = 4800 m^2$

Q.2. The perimeter of a triangular field in 420m and its sides are in the ratio 6 : 7 : 8. Find the area of the triangular field.

Ans. Let the sides be $6x$, $7x$ and $8x$ respectively.

Perimeter $= 6x + 7x + 8x$

$\Rightarrow$ $420 = 21x$

$\Rightarrow$ $x = 20$

$\therefore$ Sides are, $a = 6x = 6 \times 20 = 120$ m

$b = 7x = 7 \times 20 = 140$ m

and $c = 8x = 8 \times 20 = 160$ m

$$\therefore \quad s = \frac{420}{2} = 210\ m$$

$\therefore$ Area of Δ

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{210(210-120)(210-140)(210-160)}$$

$$= \sqrt{210 \times 90 \times 70 \times 50}$$

$$= \sqrt{21 \times 9 \times 7 \times 5 \times 10 \times 10 \times 10 \times 10}$$

$$= \sqrt{9 \times 10 \times 10 \times 10 \times 21 \times 7 \times 5}$$

$$= 3 \times 10 \times \sqrt{(3 \times 7) \times 7 \times 5}$$

$$= 300 \times 7\sqrt{15} = 2100\sqrt{15}\ m^2$$

Q.3. Find the cost of laying grass in a triangular field of sides 50m, 65m and 65m at the rate of Rs. 7 per m^2.

Ans. Given, $a = 50$m, $b = 65$m, $c = 65$m

$$s = \frac{50 + 65 + 65}{2}$$

$$\Rightarrow \quad s = \frac{180}{2} = 90m$$

Area of triangular field

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{90(90-50)(90-65)(90-65)}$$

$$= \sqrt{90 \times 40 \times 25 \times 25} = 25 \times 60$$

$$= 1{,}500 m^2$$

$\therefore$ Cost of laying grass at the rate of Rs. 7 per $m^2 = 1500 \times 7m^2 =$ Rs. 10,500

Q.4. The perimeter of a triangle is 50 cm. One side of a triangle is 4 cm longer than the smaller side and the third side is 6 cm less than twice the smaller side. Find the area of the triangle.

Ans. Perimeter = 50 cm

Let us assume that the smaller side $= x$

2nd side = $(x + 4)$ cm

3rd side = $(2x - 6)$ cm

Perimeter = 50 cm

$\therefore$ $x + x + 4 + 2x - 6 = 50$

$4x = 52$

$x = 13$

$\therefore$ Hence the sides are 13 cm, 17 cm, 20 cm Semi-perimeter

$$s = \frac{a+b+c}{2} = \frac{13+17+20}{2} = 25\ cm$$

$\therefore$ Area $= \sqrt{25(25-13)(25-17)(25-20)}$

$$= \sqrt{5 \times 5 \times 3 \times 4 \times 2 \times 4 \times 5}$$

$$= 5 \times 4\sqrt{30} = 20\sqrt{30}\ cm^2.$$

Q.5. The sides of a triangular field are 41m, 40 m and 9m. Find the number of rose beds that can be prepared in the field, if each rose bed, on an average need 900 cm^2 space.

Ans. Let $a = 41$m, $b = 40$m and $c = 9$m

$$s = \frac{a+b+c}{2} = \frac{41+40+9}{2}\ m = 45$$

Area of the triangular field

$$= \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{45(45-41)(45-40)(45-9)}$$

$$= \sqrt{45 \times 4 \times 5 \times 36} = 180 m^2$$

So, the number of rose beds $= \frac{180}{0.90}$

$$\left[900 cm^2 = \frac{900}{100 \times 100} m^2 = 0.90 m^2 \right] = 2000$$

Q.6. Find the area of triangle, two sides of which are 18 cm and 10 cm and the perimeter is 42 cm.

Ans. Let a = 18 cm, b = 10 cm, c = 42 cm – (28) = 14 cm

$s = \frac{a+b+c}{2} = \frac{18+10+14}{2} = \frac{42}{2} = 21$

By Heron's formula.

$= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{21(21-18)(21-10)(21-14)}$

$= \sqrt{21(3)(11)(7)} = 21\sqrt{11}$ cm^2

Q.7. The base and the corresponding altitude of a parallelogram are 10 cm and 3.5 cm, respectively. The area of the parallelgram is 30 cm^2

Ans. False.

Area of a parallelogram = Base × Altitude
= 10× 3.5
= 35 cm^2

Q.8. The area of regular hexagon of side *a* is the sum of the area as of the five equilateral triangles with side *a*.

Ans. False, the regular hexagon is divided into six equilateral triangles.

Q.9. The area of a triangle with base 4 cm and height 6 cm is 24 cm^2.

Ans. False. Area of triangle = $\frac{1}{2}$ ×Base × Height

$= \frac{1}{2} \times 4 \times 6$

= 12 cm^2

Q.10. The cost of levelling the ground in the form of a triangle having the sides 51m, 37m and 20m at the rate of Rs. 3 per m^2 is Rs. 918.

Ans. True, Given sides of a triangle are 51m, 37m and 20 m.

Now, $s = \frac{51+37+20}{2} = \frac{108}{2}$

$s = 54$m

Area of triangle = $\sqrt{54(54-51)(54-37)(54-20}$

(By Heron's formula)

$= \sqrt{54 \times 3 \times 17 \times 34}$

$= \sqrt{9 \times 3 \times 2 \times 3 \times 17 \times 17 \times 2}$

= 3 × 3 ×2 × 17 = 306m^2

Cost of levelling per m^2 = Rs. 3

∴ Cost of levelling 306m^2 = Rs. 3 × 306 = Rs. 918

Multiple Choice Questions

Q.1. The length of each side of an equilateral triangle having an area of $9\sqrt{3}$ cm^3 is :

(a) 8 cm (b) 36 cm
(c) 4 cm (d) 6 cm

Ans. (d)

Q.2. In the area of an equilateral triangle is $16\sqrt{3}$cm^2, then the perimeter of the triangle is:

(a) 24 cm (b) 30 cm
(c) 36 cm (d) 40 cm

Ans. (a)

Q.3. The area of an isosceles triangle having base 2 cm and the length of one of the equal sides 4 cm, is

(a) $\sqrt{15}$ cm^2 (b) $\sqrt{\frac{15}{2}}$ cm^2
(c) $2\sqrt{15}$ cm^2 (d) $4\sqrt{15}$ cm^2

Ans. (a)

Q.4. The edges of a triangular board are 6 cm, 8 cm and 10 cm. The cost of painting it at the rate of 9 paise per cm^2 is :

(a) Rs. 2.00 (b) Rs. 2.16
(c) Rs. 2.48 (d) Rs. 3.00

Ans. (b)

Q.5. Area of an isosceles right triangle is 8cm^2. Its hypotenuse is :

(a) 32 cm (b) 4 cm
(c) $4\sqrt{3}$ cm (d) $2\sqrt{6}$ cm

Q.6. The area of ΔABC in which AB = BC = 4 cm and ∠B = 90° is :

(a) 16 cm^2 (b) 8 cm^2
(c) 4 cm^2 (d) 12 cm^2

Ans. (b)

Q.7. The base of a right triangle is 15 cm and its hypotenuse is 25 cm. Then its area is :

(a) 187.5 cm^2 (b) 375 cm^2
(c) 150 cm^2 (d) 300 cm^2

Ans. (c)

Q.8. The area of a triangle whose sides are 13 cm, 14 cm and 15 cm is:

(a) 42 cm^2 (b) 84 cm^2
(c) 94 cm^2 (d) 100 cm^2

Ans. (b)